Patent Claims

1. Device for simultaneously detecting radiation of different wavelengths, having a number of base modules (18, 20, 22) arranged one above the other, an optical module with an objective (16) and an electronic module (26) with light-detecting elements, wherein a device (84, 86) is provided in each base module (18, 20, 22) for reflecting or deflecting radiation of a predetermined wavelength range, and the light-detecting elements each correspond to one of the devices(84, 86).

2. Device according to claim 1, wherein the base modules (18, 20, 22) are arranged rotated at a specific angle from one another to correspond to the light-detecting elements.

3. Device according to claim 1 or 2, wherein at least one light-emitting element is provided in the electronic module (26).

4. Device according to claim 3, wherein the light-emitting and light-detecting elements are arranged on printed circuit boards (28, 30).

5. Device according to one of claims 1 to 4, wherein additionally a filter module (24) is provided.

6. Device according to one of claims 1 to 5, wherein shutters are provided.

7. Base module with a first bore (62) arranged coaxially with the central axis of the base module (18, 20, 22) and a number of other bores (64, 66, 68) arranged rotationally symmetrically to the first bore (62), the first bore (62) being provided to receive a beam splitter

(84) and one of the other bores (64, 66, 68) being provided to receive another reflecting element (84, 86).

8. Base module according to claim 7, wherein the additional reflecting element (84, 86) is a beam splitter (84).

9. Base module according to claim 7, wherein the additional reflecting element (84, 86) is a mirror (86).

10. Base module according to one of claims 7 to 9, wherein the beam splitter (84) and the additional reflecting element (84, 86) are arranged substantially parallel to one another.

11. Base module according to one of claims 7 to 10, wherein the central bore (62) and at least one of the other bores (64, 66, 68) have cylindrical recesses (65, 67, 69) arranged at an angle of 45°, the diameter of which corresponds to the marginal dimensions of beam splitters (84) and reflecting elements (84, 86) which are to be inserted.

12. Base module according to one of claims 7 to 11, wherein the other bores (64, 66, 68) are arranged equidistantly from one another.

13. Base module according to one of claims 7 to 12, wherein the other bores (64, 66, 68) and the central bore (62) have the same diameter.

14. Base module according to one of claims 7 to 13, which is constructed as a board (60) with a round outline.

15. Base module according to one of claims 7 to 14, wherein pin bores (70) are provided in surfaces which adjoin one another on adjacent base modules (18, 20, 22).

16. Charging unit for a device according to one of claims 1 to 6, with a charger and a communication module.

17. Process for adjusting a device (10) according to one of claims 1 to 6, wherein focussing is carried out in order to adjust the device (10).

18. Process according to claim 17, wherein the adjustment is made by varying the distance between the device (10) and the object which is to be measured, by measuring the distance while it is being changed and determining the appropriate distance by means of the pattern of the data measured, as a function of the distance.

19. Use of a device (10) according to one of claims 1 to 6 for measuring substances native to the body by detecting them in the human eye.

Captions to the drawings:

Figure 1:

Handmessgerat mit Batteriebetrieb = battery-operated hand-held measuring device

Datenverarbeitungssystem = data processing system

Lade/Kommunikations-Station = charging/communication station

Standard Kommunikationsschnittstelle (RS232, Netzwerk, Bluetooth, Infrarot, USB) = standard communications interface (RS232, network, Bluetooth, infra-red, USB)

Figure 2:
Batterie Modul = battery module
Elektronik Modul = electronic module
Filter Modul = filter module
Strahlteiler Modul = beam splitter module
Optik Modul = optical module
Leiterplatte = printed circuit board
Auge = eye
Objektiv = objective

Figure 3:
Referenz = reference
Anregung Substanz = excitation substance
Emission Substanz = emission substance
Strahlteiler Modul = beam splitter module
Wellenlange = wavelength

Figure 4:
Strahlteiler Modul = beam splitter module
Filter Modul = filter module

Batterie Modul = battery module
Elektronik Modul = electronic module
Filter Modul = filter module
Strahlteiler Modul = beam splitter module
Optik Modul = optical module
Auge = eye
Strahlengang = optical path
Emission Substanz = emission substance
Spiegel = mirror

Figure 5:

LED1 fur Anregung Substanz 1 = LED1 for excitation substance 1
LED1 fur Anregung Substanz 2 = LED1 for excitation substance 2
Photodiode fur Messung der Emission Substanz 1 = photodiode for measuring the emission substance 1
Photodiode fur Messung der Emission Substanz 2 = photodiode for measuring the emission substance 2
Verstarker = amplifier
Tiefpass = low pass
AD-Wandler - analogue-to-digital converter
Starttaste = start key
Schnittstelle Lade/Kommunikations-Station = interface charger/communications station
Lock In Verstarker = lock in amplifier